ABSTRACT OF THE DISCLOSURE

The present invention is a method and apparatus for providing preferential enhancement of an artery of interest relative to adjacent veins and background tissue. The method and apparatus adapts the timing of a maximum or substantially elevated rate of infusion to correlate with the collection of image data corresponding to the center of k-space. The technique and apparatus temporally correlates the timing of a maximum or substantially elevated rate of infusion and the mapping of k-space according to the location of the artery of interest, the size of the artery of interest, the physical condition of the patient, the time delay due to the configuration of the contrast agent delivery system, and/or the type of pulse sequence employed by the imaging apparatus. Adapting the timing of a maximum or substantially elevated rate of infusion to correlate with the collection of image data corresponding to the center of k-space provides a period of a maximum or substantially elevated contrast concentration in the artery of interest relative to adjacent veins during collection of at least a portion of the image data corresponding to the center of k-space.